



MAY 17, 2023



NORTH
Dakota
Be Legendary.

| Water Resources

DEVILS LAKE

OUTLET ADVISORY UPDATE

OUTLINE



Introduction & Membership Term Review

Andrea Travnicek, Director

National Weather Service Situational Update

Amanda Lee, NWS Grand Forks Service Hydrologist

2022 Operational Summary / Devils Lake Basin Overview

Chris Korkowski, Investigations Section Chief, NDDWR

Outlook For 2023 Outlet Operations

Chris Korkowski, Investigations Section Chief, NDDWR

Devils Lake West End Capital Improvement Project

Chris Korkowski, Investigations Section Chief, NDDWR

Status By Committee Members

Final Comments

DLOMAC MEMBERSHIP



Dr. Andrea Travnicek - Governor's designee (8/1/2021 - 7/31/2025)

Katrina Kessler - MN Representative (5/8/2020 - Open)

Joel Anderson - Towner County (6/30/2021 - 7/1/2023)

Bruce Grubb - City of Fargo (6/30/2021 - 7/1/2025)

Kenneth Vein - City of Grand Forks (6/30/2021 - 7/1/2025)

Tim Meyer - City of Lisbon (6/30/2021 - 7/1/2025)

Douglas Sr. Yankton - Spirit Lake Nation (6/30/2021 - 7/1/2025)

Michael Steffan - Benson County (6/30/2021 - 7/1/2024)

Bill Mertens - Ramsey County (7/02/2022 - 7/1/2026)

Ben Varnson - Nelson County (6/30/2021 - 7/1/2024)

Gwendolyn Crawford - City of Valley City (10/27/2022 - 7/1/2026)

Nicole Armstrong - Manitoba, Canada

Cindy Schwehr - Barnes County (6/30/2021 - 7/1/2024)

Jeff Frith - Devils Lake Basin Joint Water Resource Board (6/30/2021 - 7/1/2023)

Dick Johnson - City of Devils Lake (7/02/2022 - 7/1/2026)

Senator Terry Wanzek - ND State Senate (12/12/2022 - 7/1/2025)

Representative Dennis Johnson - ND House of Representative (12/12/2022 - 7/1/2025)

DLOMAC MEMBERSHIP TERMS

Home

All Boards

Upcoming Appointments

Apply

Nominations

My Data

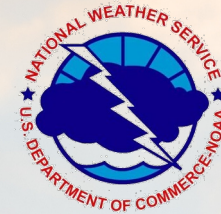
Devils Lake Outlet Management Advisory Committee

< Return

Board Summary

Type	Advisory
Governed By	NDCC — https://www.legis.nd.gov/cencode/t61c36.pdf?20150709172913
Board Summary	In response to rising water levels at Devils Lake, the State of North Dakota constructed outlets to direct water out of the basin as necessary. The Devils Lake Outlet Management Advisory Committee exists to advise the governor and State Water Commission on the operations of all Devils Lake outlets. The committee may recommend criteria for operation of each outlet based on outflow volumes, water quality considerations and the risk of an overflow of Devils Lake. Localities surrounding the lake and downstream outlets — including the counties of Benson, Ramsey, Towner, Nelson and Barnes and the cities of Devils Lake, Valley City, Lisbon/Fort Ransom, Fargo and Grand Forks — are represented on the committee, as well as representatives from the legislative assembly, the Devils Lake Joint Water Resource Board, Spirit Lake Nation, Minnesota and Manitoba. Any recommendations developed by the committee must receive support from ten of the seventeen members of the committee before submission to the governor or State Water Commission. Any recommendation not receiving majority support but receiving support from at least five members may be submitted as a minority recommendation.
Compensation	Voluntary
Term Length	4 years, no term limit
Meeting Frequency	

Members With
Upcoming Term
Expirations Are
Encouraged To Apply
For Reappointment
Through The Board
Application Portal



NATIONAL WEATHER SERVICE UPDATE

AMANDA LEE, NWS GRAND FORKS

DEVILS LAKE BASIN WATER BALANCE

AVERAGE ANNUAL ESTIMATES | 2010-2022

Precipitation = 19.9 Inches
Inflow = 252,500 Acre-Feet

Lake Precipitation
+
Basin Runoff (Inflow)



Lake Level Rises

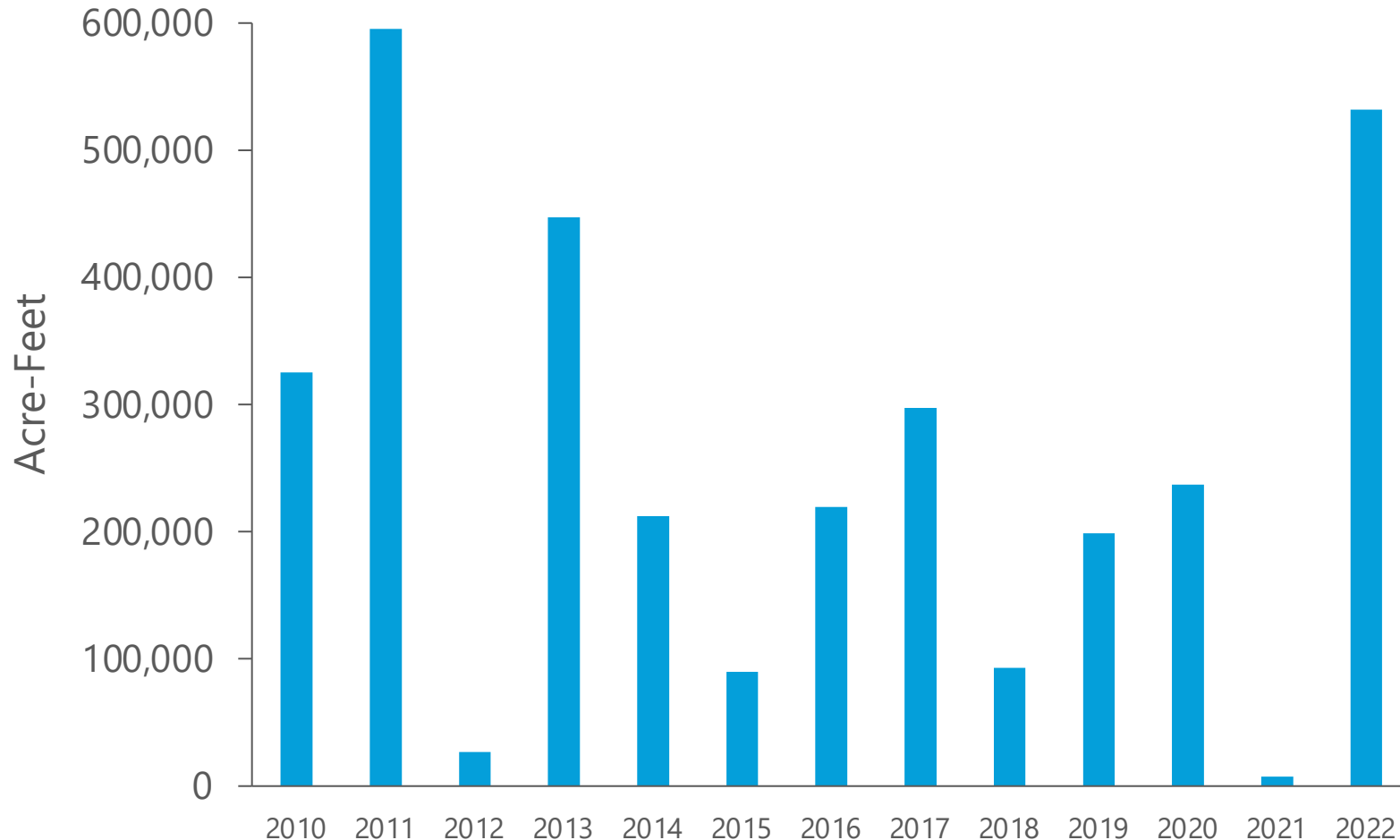
Evaporation = 30.73 Inches
Outlet Discharge = 104,478 Acre-Feet

Lake Evaporation
+
Outlet Discharge



Lake Level Falls

DEVILS LAKE ESTIMATED INFLOW



**Average Annual Inflow
From 2010-2022**

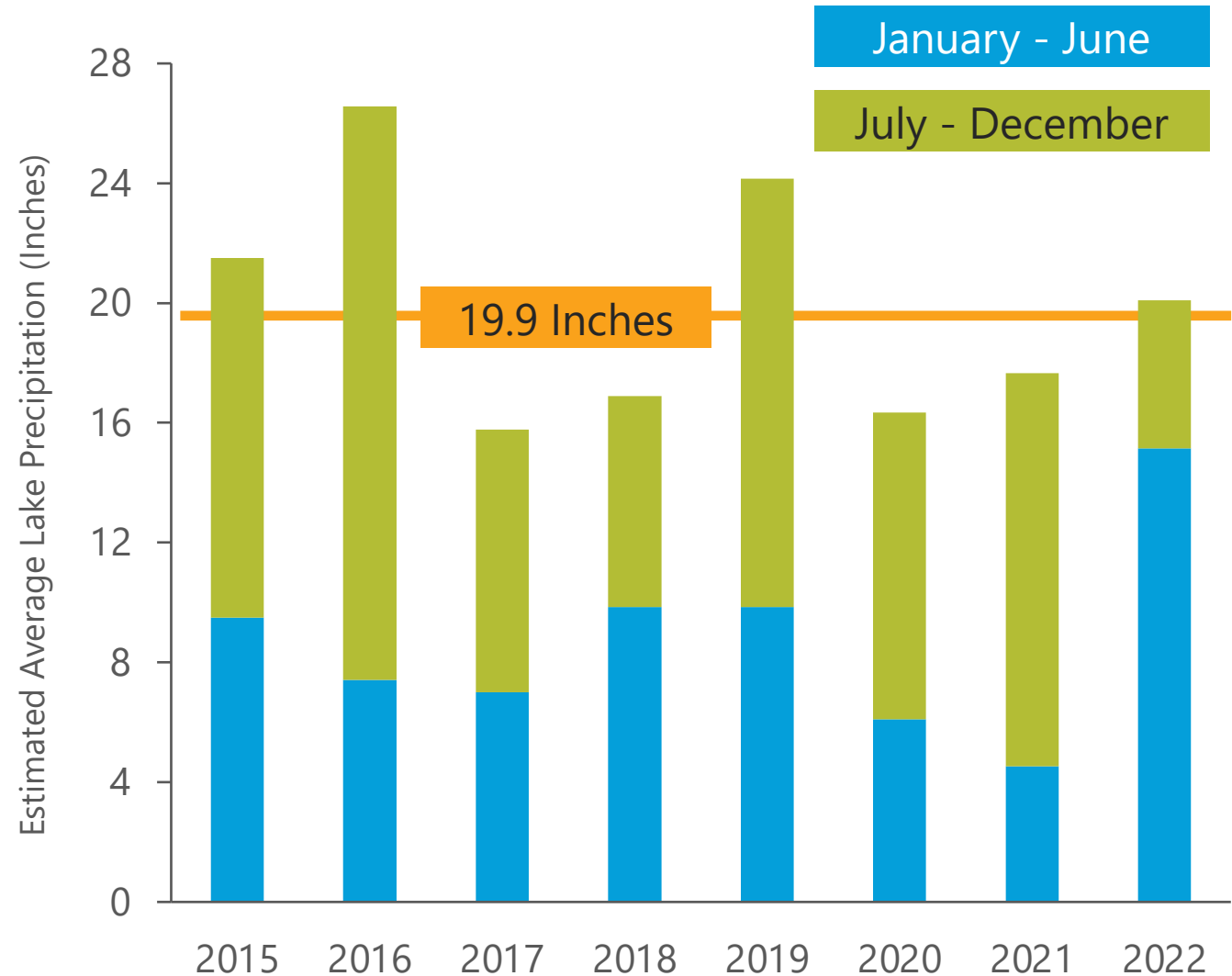
Is Approximately
252,460 Acre-Feet

**2022 Estimated Inflow
Was 531,789 Acre-Feet**

DEVILS LAKE PRECIPITATION (2015-2022)

Annual Average (2010-2022)
19.9 Inches

Precipitation In January-June
Period Led To Significant
Increase In Lake Elevation



LAKE ELEVATION



Lake Elevations **Above 1446 Feet** Include Devils Lake & Stump Lake Combined

Devils Lake **Peaked At 1454.3 Feet** In **2011**

Devils Lake Has Been **Steadily Declining** With The Exception Of The **Spring Of 2022**

Currently **Down Approximately 4 Feet** Since Its Peak

DEVILS LAKE OUTLET TIMELINE



2005 West End Outlet Constructed

Devils Lake Peaked At 1448.9 Feet

2009 Lake Rose 3.5 Feet

State Prioritized Outlet Capacity Increases

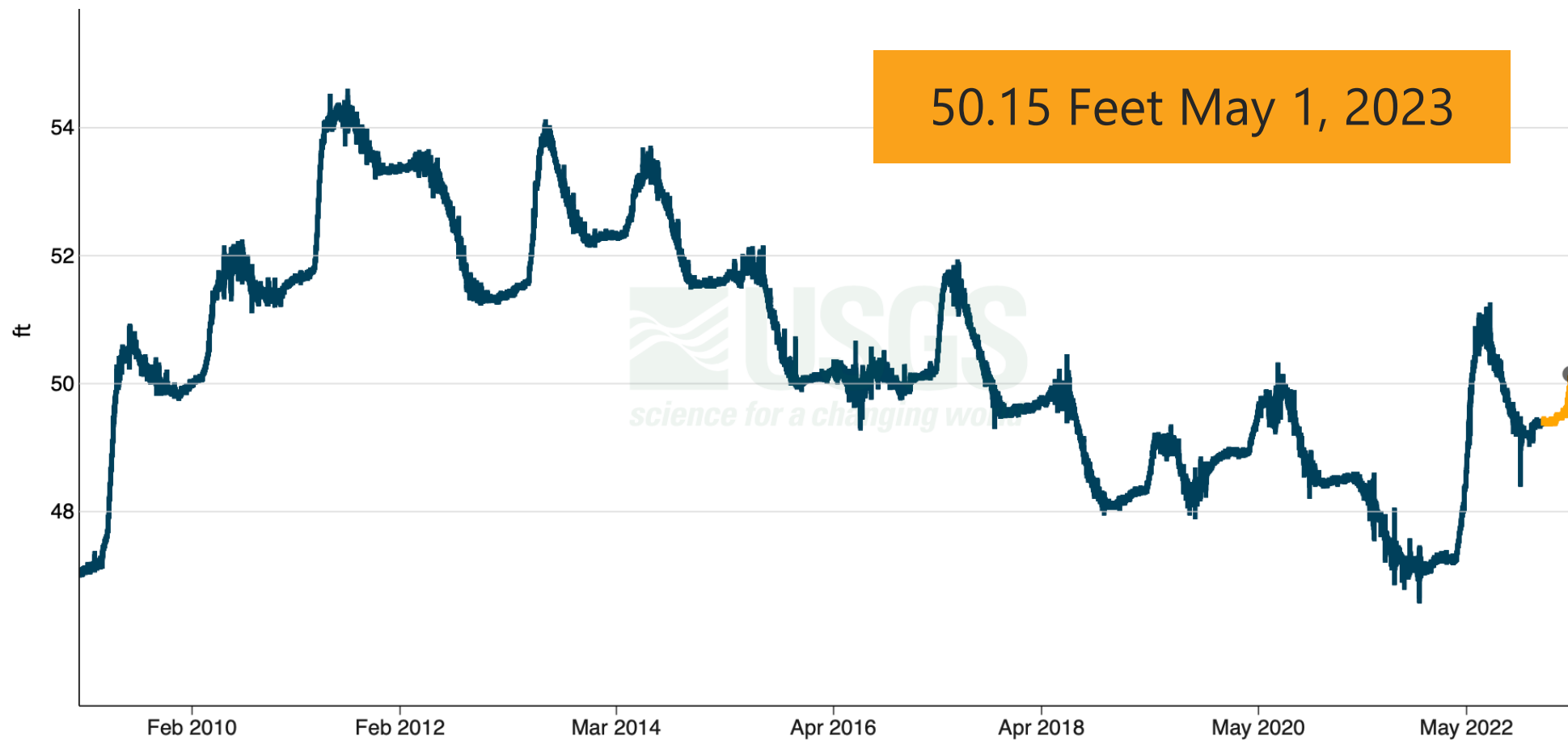
DEVILS LAKE OUTLET TIMELINE



2010 West End Outlet Capacity Increased
100 cfs To 250cfs

2011 Lake Reached Record Elevation
Elevation Of 1454 Feet

2012 The State Completed East End Outlet
Capacity Of 350 cfs



LAKE ELEVATION

2009 - PRESENT

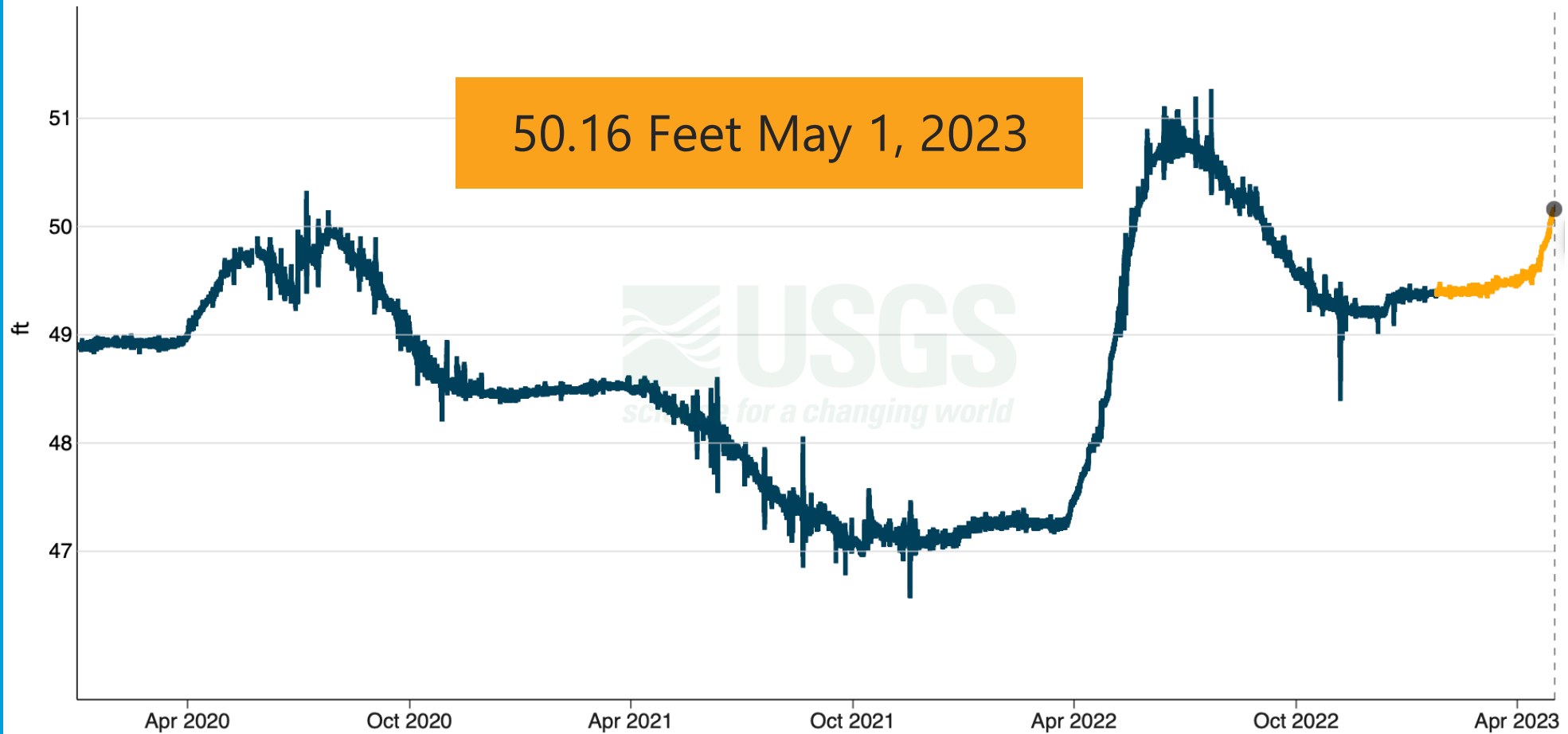
Devils Lake Peaked At **1454.3 Feet** In 2011

Devils Lake Has Been **Steadily Declining** With The Exception Of The **Spring Of 2022**

Currently Down Approximately **4 Feet** Since Its Peak

LAKE ELEVATION

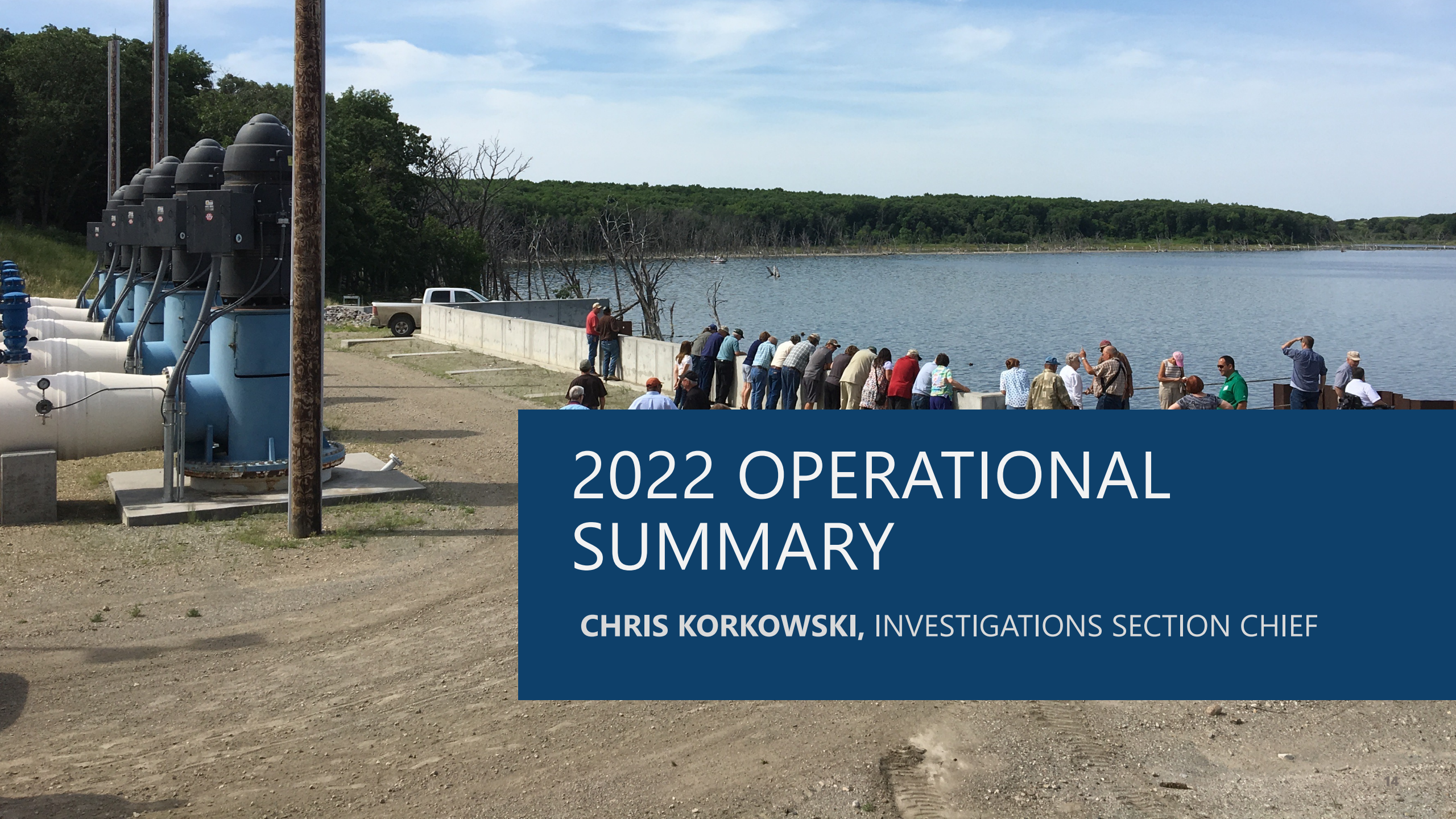
2020 - PRESENT



Historically Dry Conditions Throughout **2021** Caused **Significant Drop** In Lake Levels

Devils Lake **Rose** Approximately **4 Feet** In **2022** At The Peak

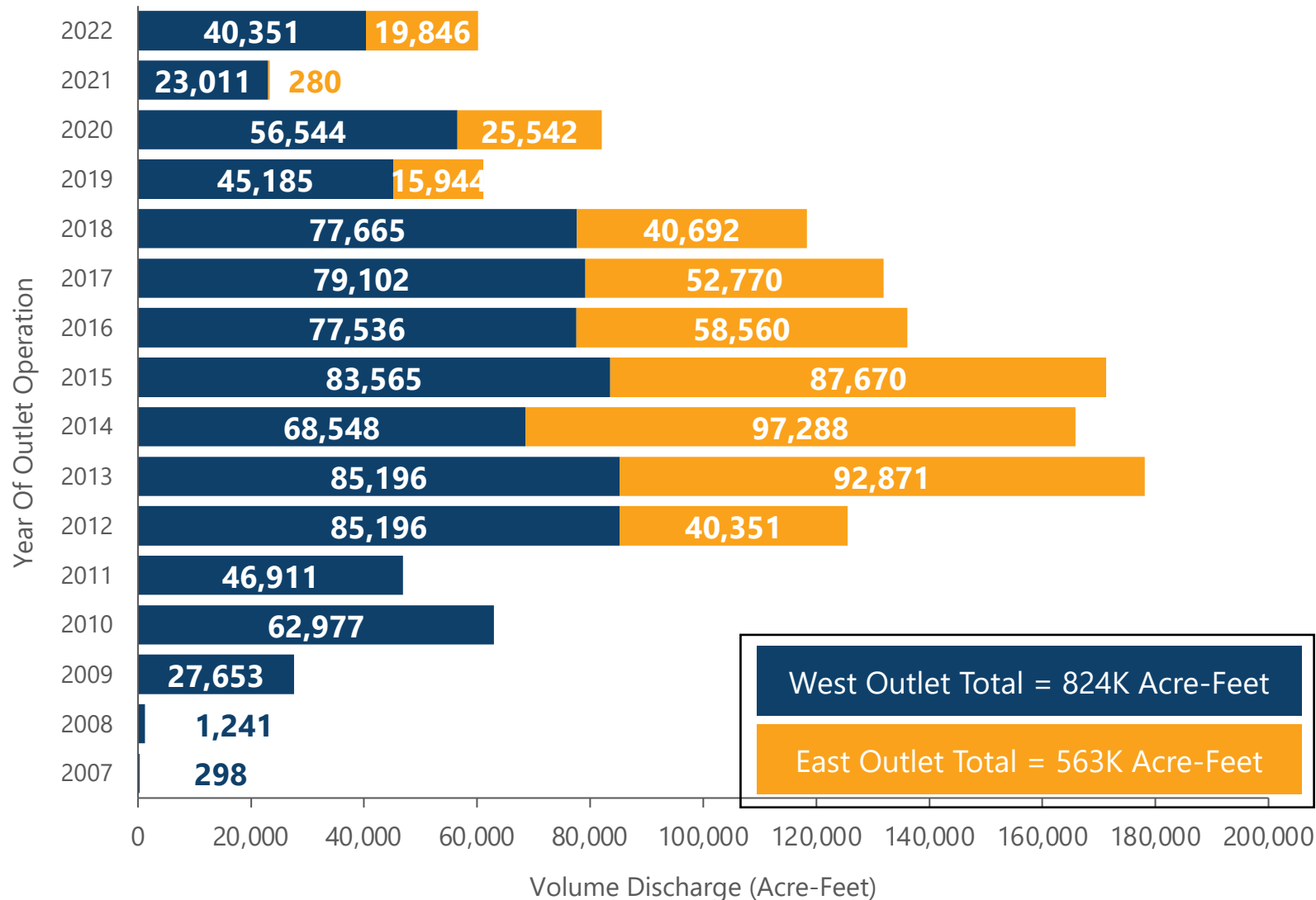
In **2023**, Devils Lake Is **Expected** To Rise Approximately **1 Foot** To Approximately **1450.5**



2022 OPERATIONAL SUMMARY

CHRIS KORKOWSKI, INVESTIGATIONS SECTION CHIEF

2007-2022 DEVILS LAKE OUTLET DISCHARGE



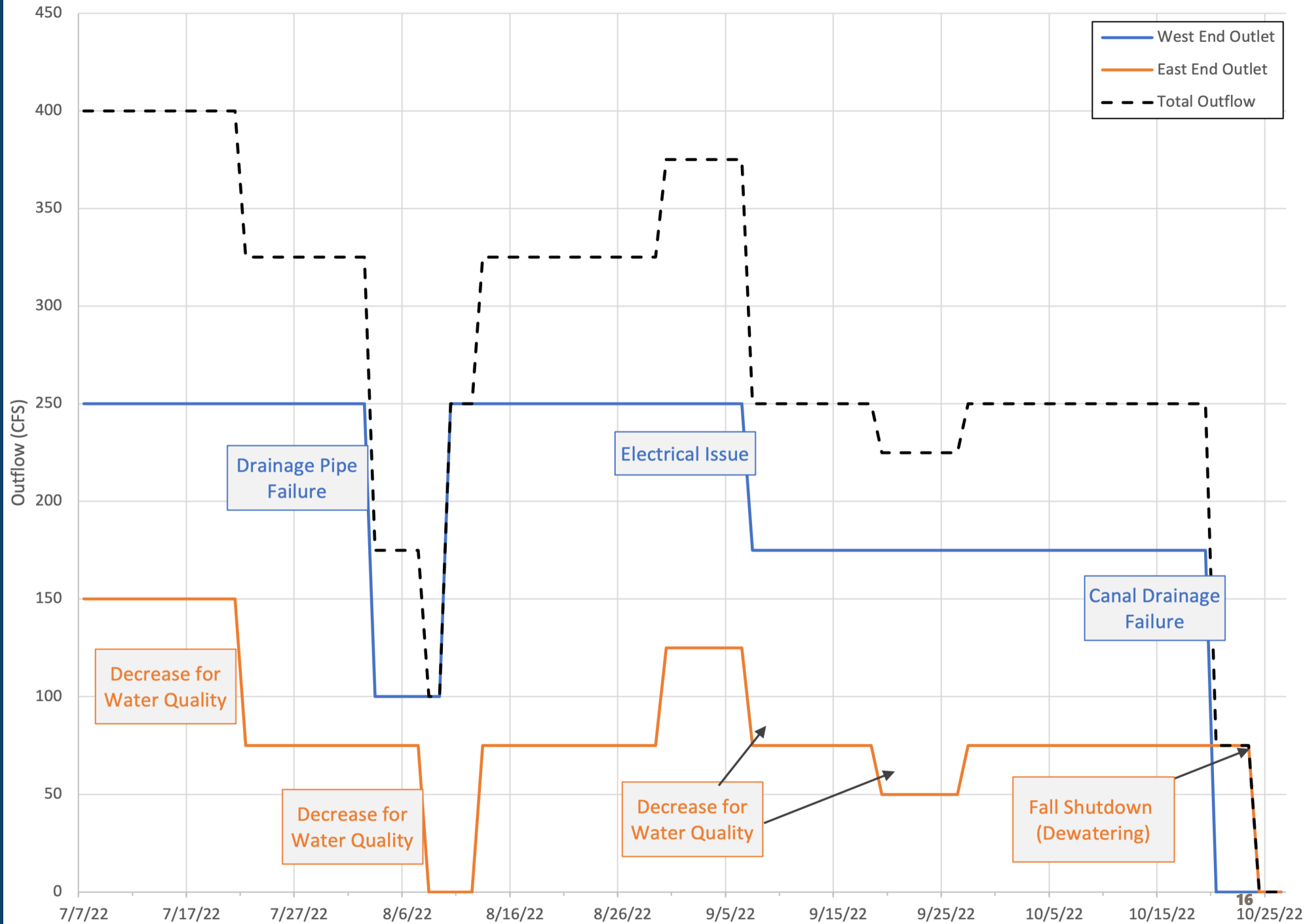
2022 Total Discharge
Was Approximately
60,000 Acre-Feet

Outlets Discharged For
121 Days In 2022

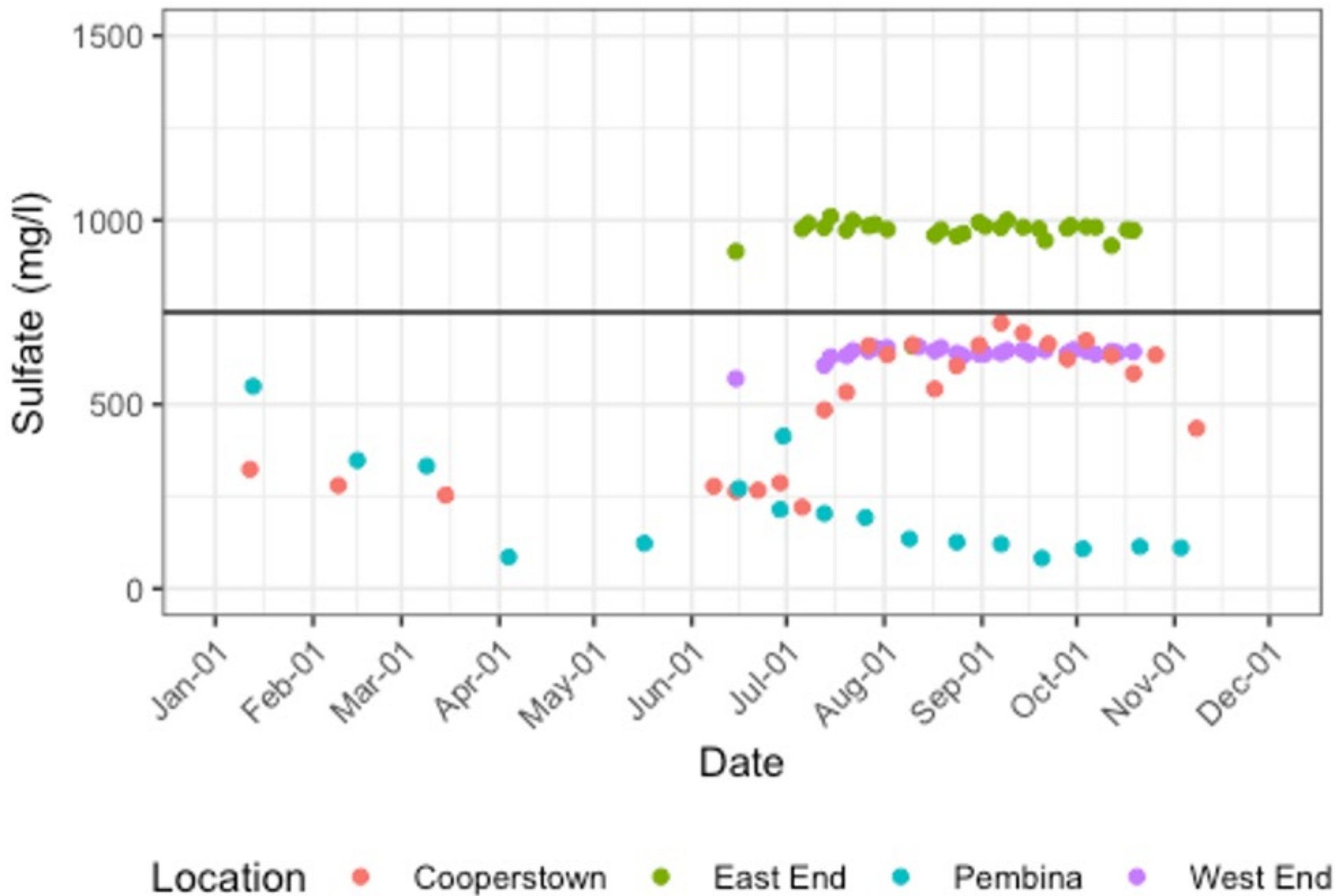
Combined Discharge Of
Over 1.3M Acre-Feet
(2007 - 2022)

Estimated Current Lake
Elevation Is **7.4 Feet**
Higher Without Outlets

2022 DEVILS LAKE OUTLET DISCHARGE



2022 SULFATE LEVELS



WEST END OUTLET CIP



DWR Entered Into An Agreement With Bartlett & West/AECOM Joint Venture To Complete A Capital Improvement Plan (CIP) For The Devils Lake West End Outlet

This Plan Will Help Identify Infrastructure That Needs To Be Updated & The Timeframe To Due So To Continue To Operate The Devils Lake West End Outlet

Field Inspections Taking Place This Week

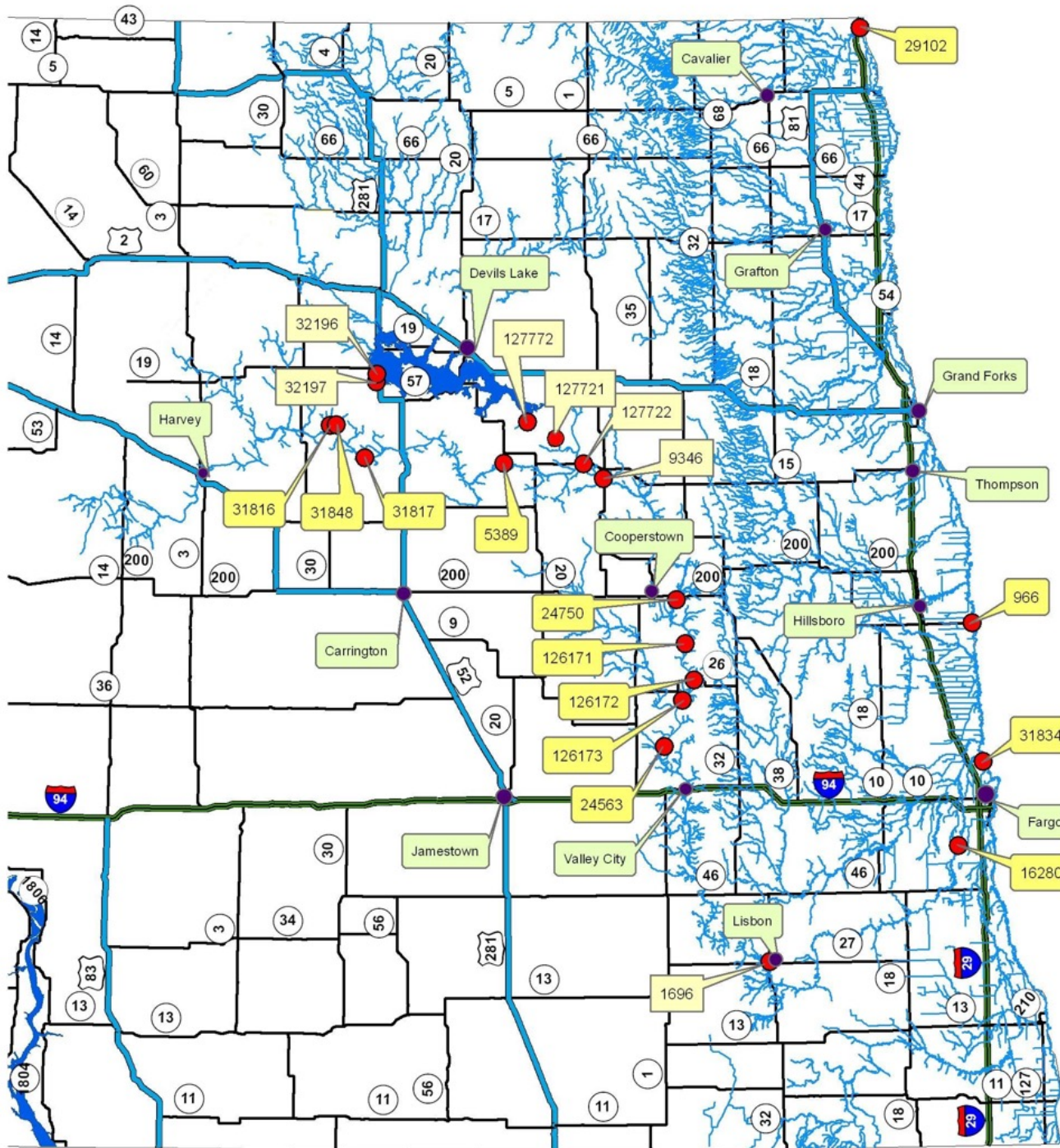
Final Report Expected Early Summer 2023



2022 WATER QUALITY REVIEW

ND DEPARTMENT OF ENVIRONMENTAL QUALITY

DEVILS LAKE OUTLET MONITORING SITES

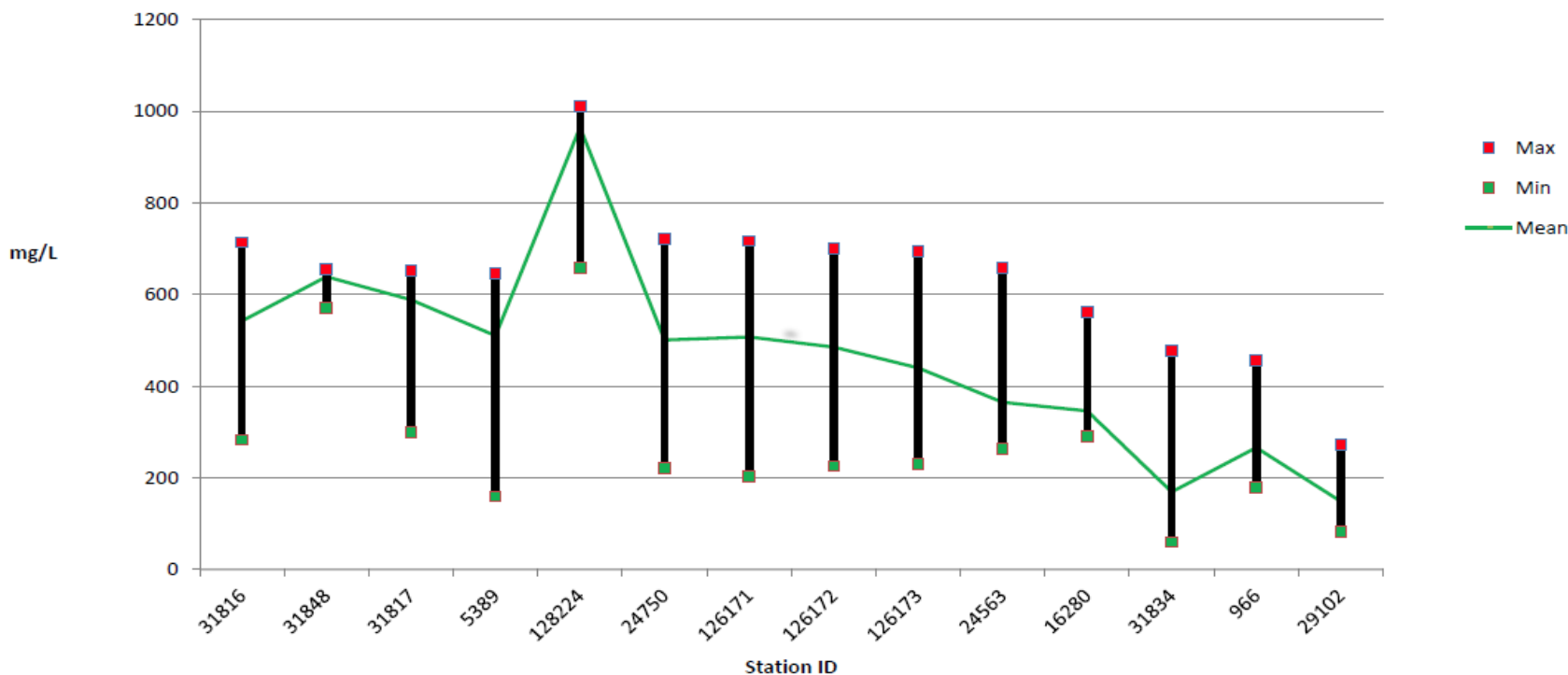


DEVILS LAKE OUTLET MONITORING SITES

381816	Sheyenne River Near Flora
32196	Devils Lake West Bay - South Of Minnewauken
32197	Round Lake Portion Of Devils Lake
31848	Devils Lake State Outlet
31817	Sheyenne River Near Bremen
5389	Sheyenne River Near Warwick
127772	East Devils Lake - East End Outlet Intake
127721	Devils Lake, East End Outlet
127722	Tolna Coulee at Tolna Dam
9346	Sheyenne River South of Pekin
24750	Sheyenne River Near Cooperstown
126171	Lake Ashtabula East Of Hannaford
126172	Lake Ashtabula At Sibley Crossing Bridge
126173	Lake Ashtabula Downstream Location At Ashtabula Crossing
24563	Sheyenne River Below Baldhill Dam
1696	Sheyenne River, North Side of Lisbon, ND
16280	Sheyenne River Near Horace
31834	Red River Near Harwood
966	Red River Near Halstad Mn
29102	Red River At Pembina

SULFATE MONITORING

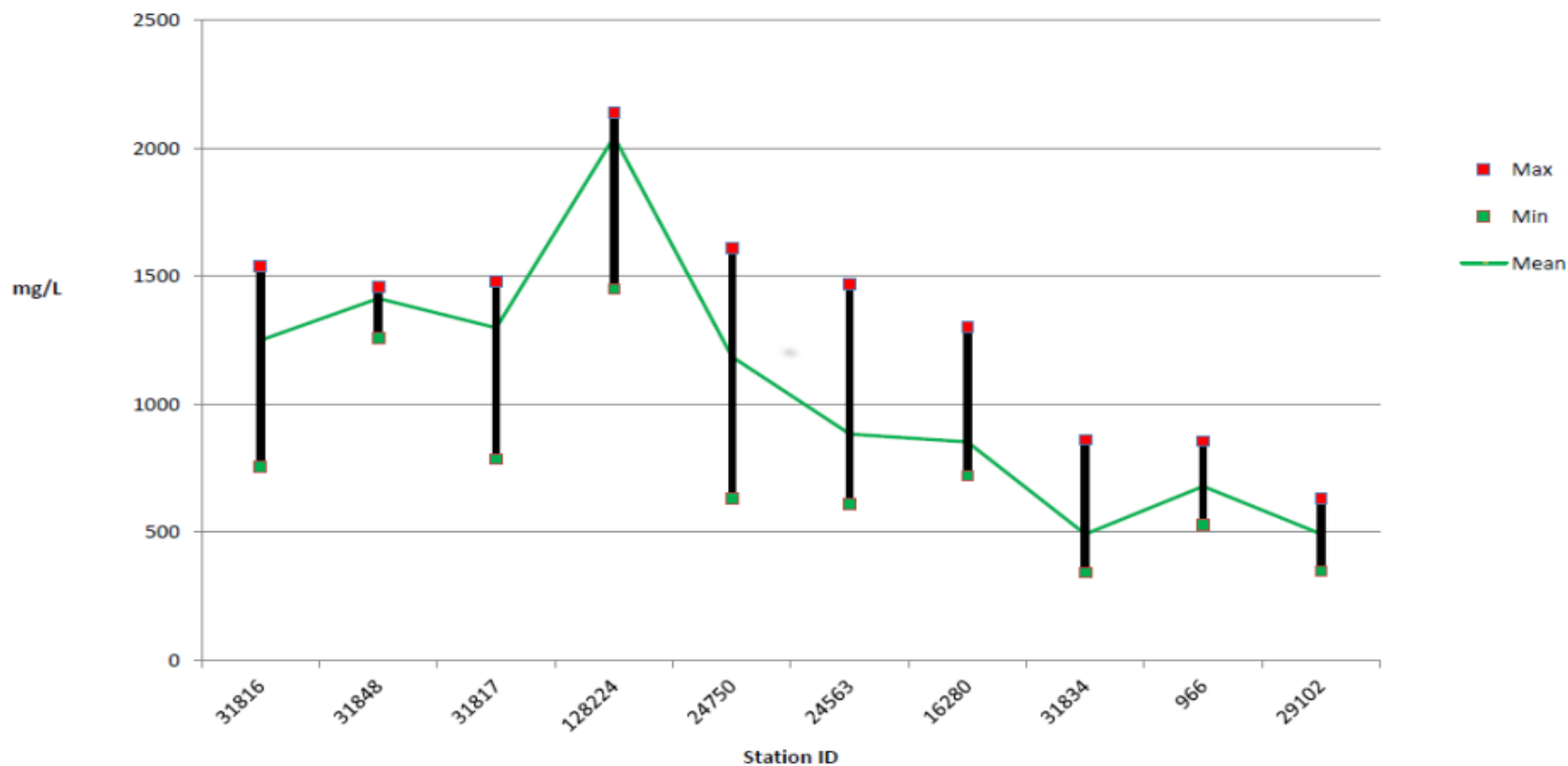
MAY 2022 - APRIL 2023



StationID	Station Description	Max	Min	Mean	Median	# Of Samples	LastCollectionDate	LastResult
31816	Sheyenne River Near Flora	714	283	541.97	551.5	34	26-Oct-22	675
31848	Devils Lake State Outlet	656	570	638.89	643	27	19-Oct-22	643
31817	Sheyenne River Near Bremen	652	300	588.24	639	34	26-Oct-22	651
5389	Sheyenne River Near Warwick	646	160	510.10	603	21	26-Oct-22	596
128224	East End Outlet at County Road 4	1010	658	964.38	978	29	19-Oct-22	972
24750	Sheyenne River Near Cooperstown	721	221	500.76	584	25	27-Mar-23	254
126171	Lake Ashtabula East Of Hannaford	717	203	507.50	608	12	26-Oct-22	644
126172	Lake Ashtabula At Sibley Crossing Bridge	700	226	485.33	595.5	12	26-Oct-22	640
126173	Lake Ashtabula Downstream Location At Ashtabula	695	230	440.08	353	12	26-Oct-22	664
24563	Sheyenne River Below Baldhill Dam	658	263	364.72	303	25	27-Mar-23	658
16280	Sheyenne River Near Horace	561	291	346.13	318	24	27-Mar-23	521
31834	Red River Near Harwood	477	60.5	169.54	91.9	15	27-Mar-23	477
966	Red River Near Halstad Mn	457	178	265.71	249	14	27-Mar-23	457
29102	Red River At Pembina	272	82.7	148.67	126.5	16	23-Mar-23	193

TOTAL DISSOLVED SOLIDS MONITORING

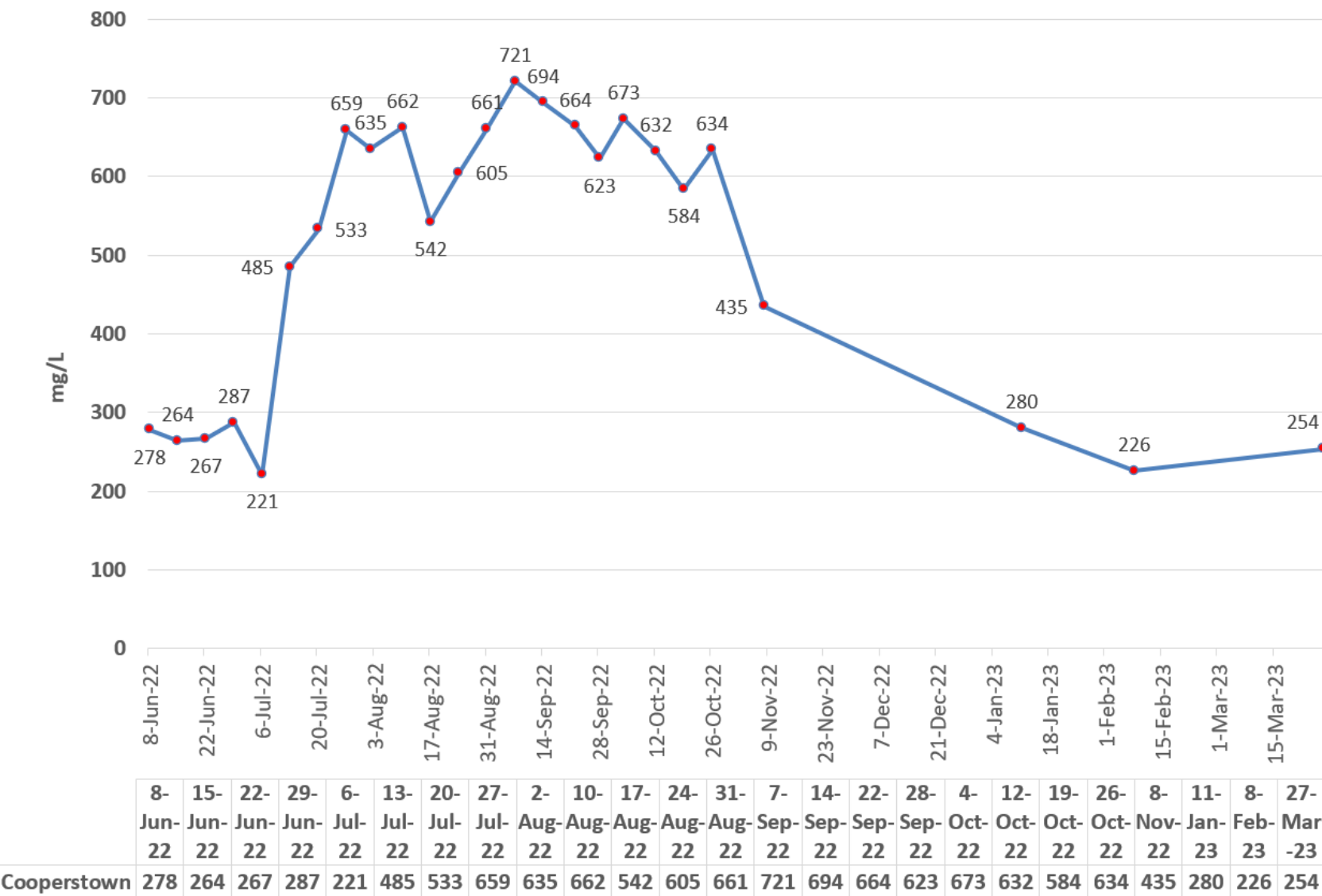
MAY 2022 - APRIL 2023



StationID	Station Description	Max	Min	Mean	Median	# Of Samples	LastCollectionDate	LastResult
31816	Sheyenne River Near Flora	1540	755	1249.57	1290	21	26-Oct-22	1500
31848	Devils Lake State Outlet	1460	1260	1413.33	1430	15	19-Oct-22	1460
31817	Sheyenne River Near Bremen	1480	785	1298.71	1430	21	26-Oct-22	1480
128224	East End Outlet at County Road 4	2140	1450	2044.71	2090	17	19-Oct-22	2130
24750	Sheyenne River Near Cooperstown	1610	629	1184.96	1380	25	27-Mar-23	713
24563	Sheyenne River Below Baldhill Dam	1470	608	882.92	765	25	27-Mar-23	1300
16280	Sheyenne River Near Horace	1300	720	852.42	800.5	24	27-Mar-23	1100
31834	Red River Near Harwood	861	342	491.73	398	15	27-Mar-23	818
966	Red River Near Halstad Mn	856	530	678.43	702.5	14	27-Mar-23	856
29102	Red River At Pembina	632	348	492.31	486.5	16	23-Mar-23	618

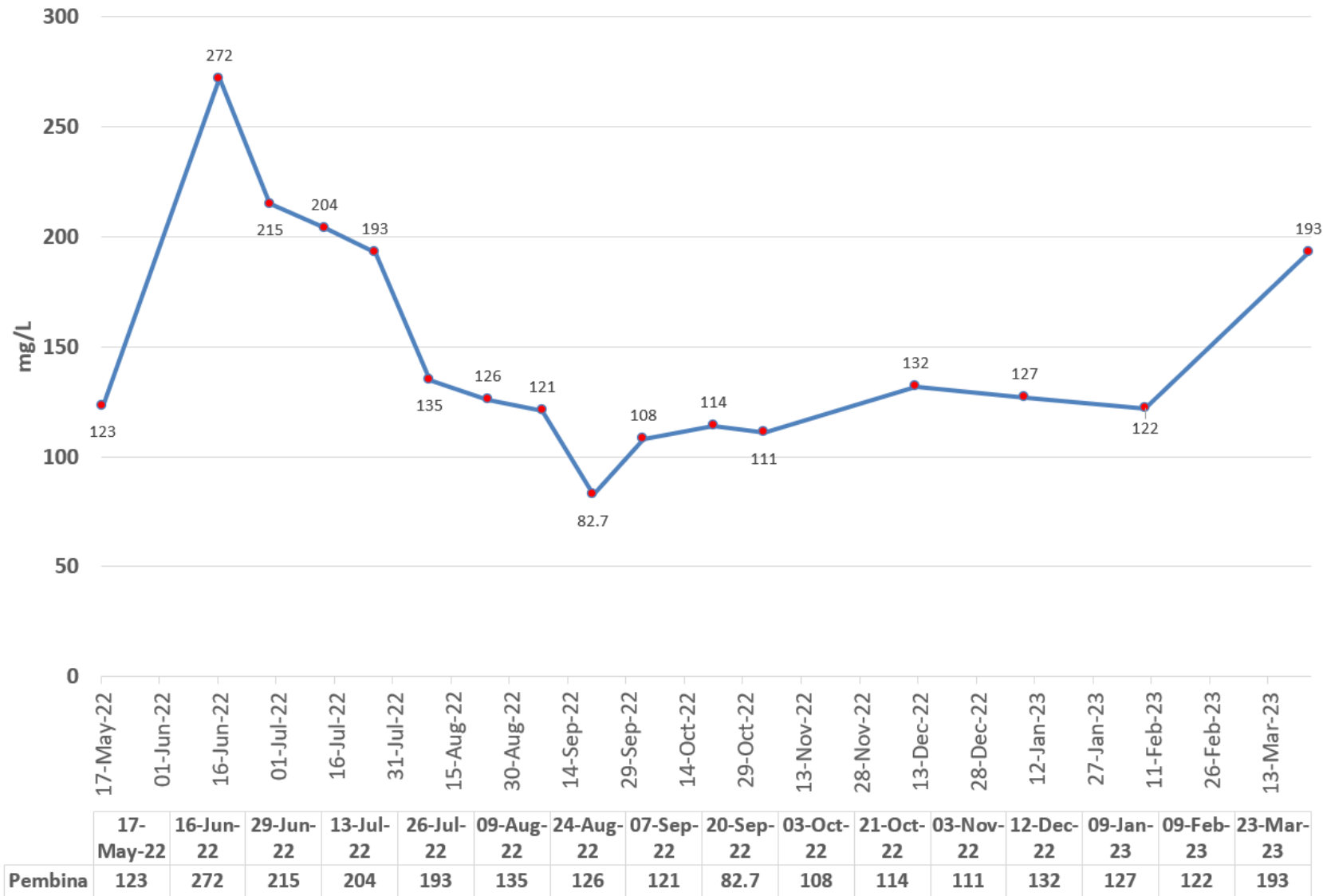
SULFATE AT COOPERSTOWN

JUNE 2022 - MARCH 2023



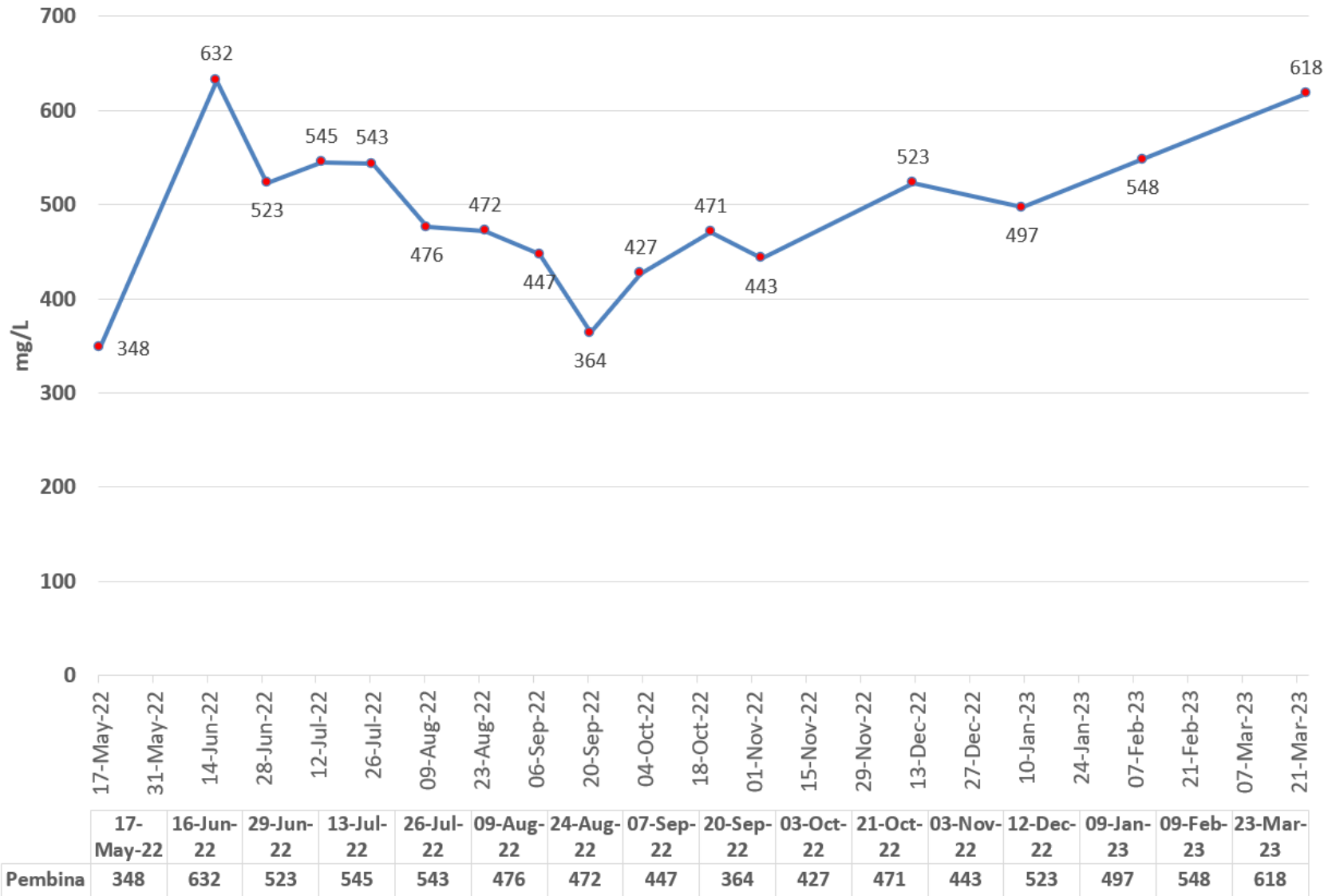
SULFATE AT PEMBINA

MAY 2022 – MARCH 2023



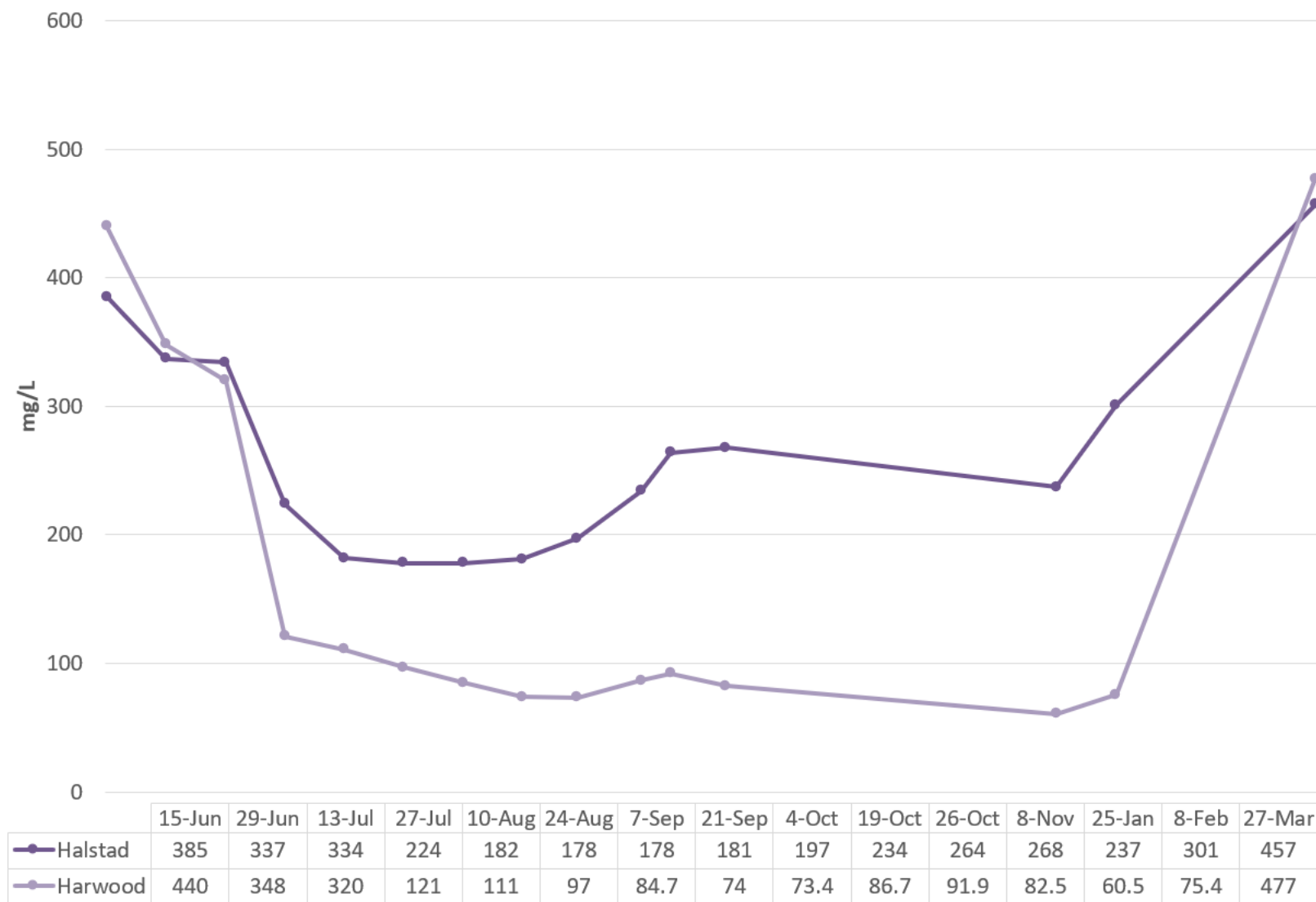
TOTAL DISSOLVED SOLIDS AT PEMBINA

MAY 2022 - MARCH 2023



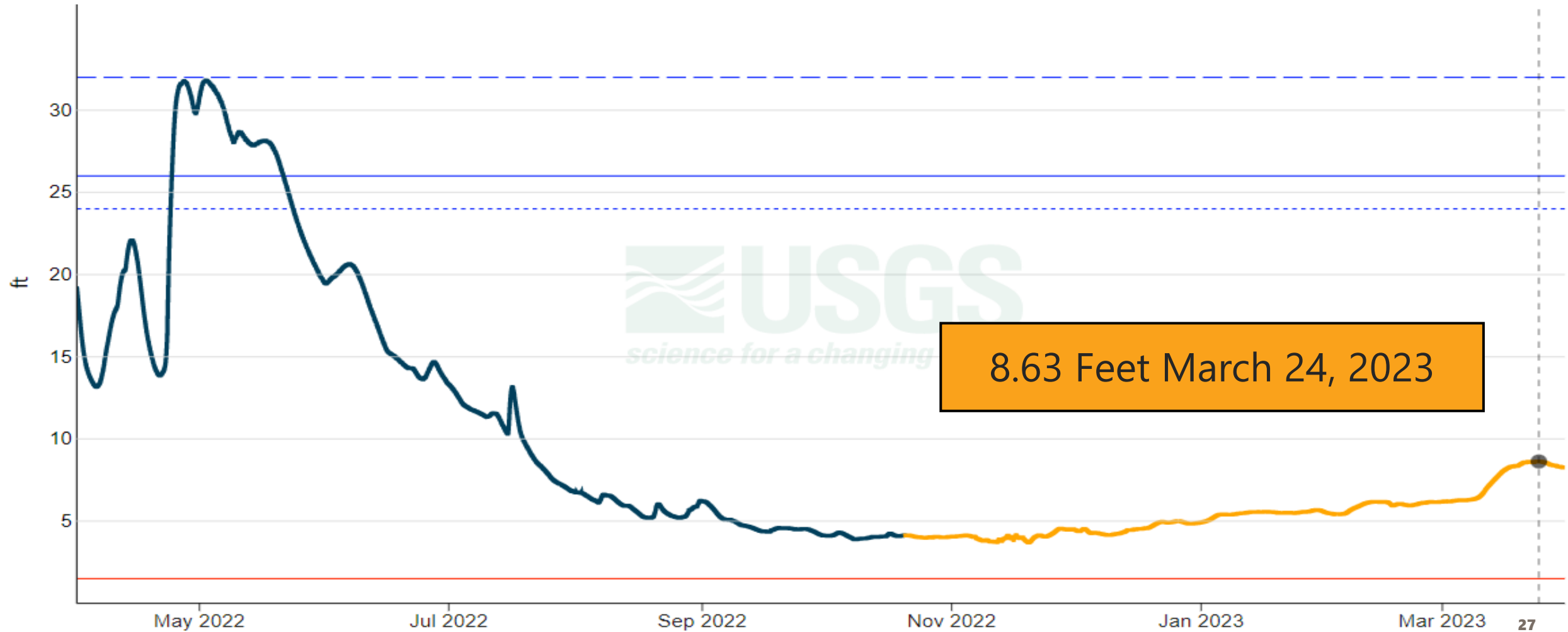
SULFATE MONITORING NEAR HARWOOD & HALSTAD

JUNE 2022 - MARCH 2023



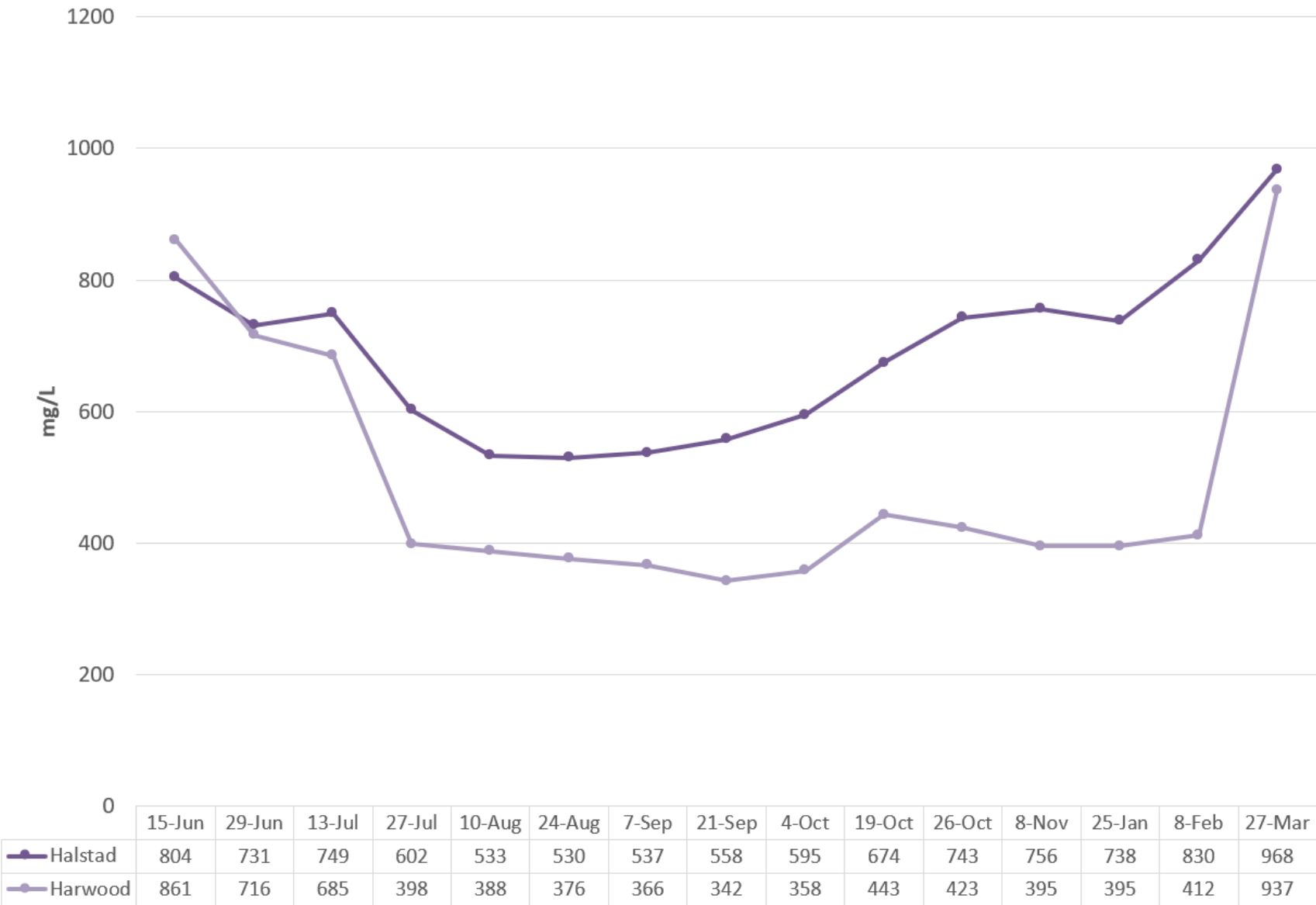
STAGE HEIGHT AT HALSTAD

APRIL 2022 - MARCH 2023



TOTAL DISSOLVED SOLIDS NEAR HARWOOD & HALSTAD

JUNE 2022 - MARCH 2023





OUTLOOK FOR 2023 OUTLET OPERATIONS

Chris Korkowski, Investigations Section Chief



FINAL COMMENTS



THANK YOU



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dwr.nd.gov



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